RESULTS OF BLOOD LEAD LEVEL TESTING OF DISTRICT OF COLUMBIA RESIDENTS

Lead is a naturally-occurring element that can be harmful to humans, particularly young children, when ingested or inhaled. After learning that the levels of lead in the drinking water supplied to District of Columbia residents by the DC Water and Sewer Authority exceeded EPA's action level for lead in drinking water, the DC Department of Health (DC DOH) tested the blood of District residents.

- Blood lead levels in District residents have been declining over recent years and continue to do so.
- The vast majority of District residents who were tested did not have high blood lead levels.
- None of the 201 residents tested by DC DOH who had elevated lead in their tap water showed blood lead levels above the level of concern.

Lead Health Effects

Because it can impact mental development, lead exposure is of greatest concern to children under age 6, pregnant women, and nursing mothers. Young children, whose brains and nervous systems are still developing, are more sensitive to the damaging effects of lead. Furthermore, the growing bodies of infants and young children tend to absorb more lead than those of older children and adults.

The *lead level of concern* for young children, pregnant women, and nursing mothers is 10 micrograms of lead per deciliter of blood (10 µg/dL). For adults, a blood lead level of 25 µg/dL is considered to be "elevated." There are no known safe levels of lead in the body. Medical treatment (known as chelation) is typically not warranted for people with blood lead levels below 45 µg/dL.

Sources of Lead

Lead occurs naturally in the environment. It is also found in other sources that result from human activities. Research suggests that the primary sources of lead exposure for most children are deteriorating lead-based paint, lead-contaminated dust, and lead-contaminated residential soil. Some adults may be exposed to lead in their work places and carry the lead back into their homes on clothing. In addition, improperly prepared foods and unsafe consumer products, such as folk medicines, cosmetics, and toys, may contain lead.

Drinking water is another potential source of lead exposure. Lead can leach into the water when it comes into contact with lead service lines, lead solder, or household plumbing fixtures that contain lead. EPA estimates that 20 percent of a person's potential exposure to lead is from drinking water. In June 2002, the District's tap water first exceeded EPA's drinking water lead action level of 15 parts per billion (ppb). Lead levels continued to be above the action level in 2003 and 2004. In August 2004, orthophosphate was added to the District's water to control the lead leaching.

Blood Lead Level Testing Results

DC DOH has been collecting blood lead level data since 1998. Further, in response to public concern about the elevated lead levels in drinking water, DC DOH offered free blood testing to District residents who were concerned about their health.

- **Most people tested did not have high blood lead levels.** DC DOH tested 5,331 District residents, and more than 99 percent had acceptable blood lead levels. DC DOH is particularly concerned about children under 6 and pregnant or nursing mothers. Of the 1,954 people in these groups tested, 98 percent had blood lead levels below the level of concern. Most of the people with lead levels above the level of concern live in homes without lead service lines where other environmental factors, such as elevated soil or dust lead levels, are present.

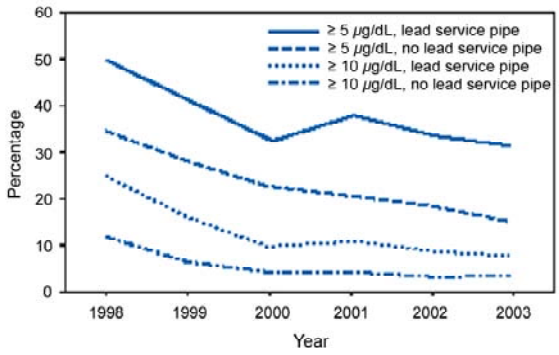
DC DOH participated in the review of this fact sheet.

- **Residents with high lead levels in their tap water did not have elevated blood lead levels.** DC DOH also tested people who live in homes with elevated lead in their tap water (over 300 ppb). Of the 201 residents from 98 homes with elevated lead in their water, no children aged 6 months to 15 years had blood lead levels over 10 µg/dL. All the adults in these homes had blood lead levels under 25 µg/dL.

- **District residents' blood lead levels are comparable to the national average.** The average blood lead level in young children, pregnant women, and nursing mothers whom DC DOH tested in 2004 was 3 µg/dL. This is slightly higher than, but comparable to, the national average.

- **Blood lead levels in District residents have been decreasing steadily.** Since 1998, there has been a general downward trend in blood lead levels among District residents. The percent of DC residents with blood lead levels greater than 10 µg/dL decreased substantially from 1998 through 2003, regardless of the type of service lines in their homes. From 2000 to 2003, this decrease was slightly less among residents of homes with lead service pipes than for those living in homes without lead pipes (see the graph). There is no evidence, however, that the exceedance of the action level in the District is connected to this smaller decrease in the number of people with elevated blood lead levels in homes with a lead service line from 2000 to 2003. This corresponds to the national trend, and is probably due to reduced lead exposure due to the phasing out of leaded gasoline and lead-based paint.

FIGURE. Percentage of DC Residents with Elevated Blood Lead Levels, by Service Line Type



From: "Blood Lead Levels in Residents of Homes with Elevated Lead in Tap Water-District of Columbia, 2004." *Morbidity and Mortality Weekly Report* 53(12); 268-270. April 2, 2004.

Conclusion

All of the children and nursing women tested with blood lead levels above the 10 µg/dL level of concern either live in homes without lead service lines or in homes with other environmental factors, such as elevated soil or dust lead levels, that may have contributed to their elevated blood lead levels. In fact, DC DOH performed environmental assessments of the homes of people with elevated blood lead levels for other sources of lead, such as lead dust and paint. All but one of the 49 homes DC DOH assessed had lead dust and/or soil levels that exceeded EPA and U.S. Department of Housing and Urban Development guidelines.

Reducing Lead Exposure

District residents under 6 years of age and women who are pregnant or breast feeding should not drink unfiltered tap water until the lead levels in the water have been further reduced to below the action level. Unfiltered tap water should not be used for preparing infant formula or concentrated juices. District residents who suspect or know that they have a lead service line should **flush their taps with cold water for at least 10 minutes** before using their water for drinking or cooking. Consumer advisories for District residents are available at www.epa.gov/dclead and are summarized in the tip sheet, *Getting the Lead out of DC Drinking Water* (available on EPA's Web site).

There are many other actions that residents can take to reduce their lead exposure. These include reducing children's exposure to lead dust by wet dusting or using a HEPA vacuum, or taking steps to avoid carrying lead from the work place to the home, and adopting healthy nutritional habits that can reduce absorption of lead into the body. For more information on reducing lead exposure around your home, call the National Lead Information Center at 1-800-424-LEAD. Also, see EPA's *Fact Sheet: Health Effects of Lead*, available at www.epa.gov/dclead.